PROBLEM STATEMENT/KEY ISSUE

According to National Institute on Drug Abuse (2017), more than 64,000 Americans died from drug overdoses in 2016, including illicit drugs and prescription opioids; nearly double in a decade. Methadone maintenance treatment is one of the oldest medically assisted treatments for opioid addiction, and is therefore the most researched medically assisted treatment to date. “Methadone is the most widely known pharmacologic treatment for opioid dependence and is effective in reducing illicit narcotic use, retaining patients in treatment and decreasing illegal drug use” (Krambeer, McKnelly, Gabrielli, & Penick, 2001). Methadone belongs to the opioid family of drugs and it occupies the same receptors in the brain as other opioids, including heroin. Therefore, once administered, methadone decreases the effects of any other opiate consumed, as the receptors affected by those opioids are already occupied. Methadone has slow release effects, unlike heroin, which allow for stabilization if correct dose is administered, and taken daily, will result in neither the “high” associated with opiate abuse, nor the “low” associated with lack of opiates after prolonged use (Rettig & Yarmolinsky, 1995). Methadone significantly minimizes the stress response associated with withdrawal from opioids (Kosten & George, 2002). According to Kosten and George (2002), this withdrawal stress response, resulting in abnormal HPA axis response and overproduction of cortisol, is one of the main features of relapse incidents.

In the initial 1964 study of methadone on those addicted to heroin, Dr. Vincent P. Dole determined that:

- Patients did not experience euphoric, tranquilizing, or analgesic effects

- An appropriate dose of methadone reduced or blocked the euphoric and tranquilizing effects of all opioid drugs
- No change usually occurred in tolerance levels for methadone over time, unlike for morphine and other opioids
- Methadone was effective when administered orally
- Because methadone has a half life of 24 to 36 hours, patients could take it once a day
- Methadone relieved the opioid craving for those addicted to heroin or other opioids such as morphine

(*SAMHSA/CSAT*, 2005).

The purpose of methadone treatment for those addicted to opiates is to eliminate the negative effects of addiction, as well as high-risk behaviors associated with drug addiction. This includes, but is not limited to, use of illicit drugs, criminal activity in order to obtain illicit drugs, spread of diseases associated with illicit drug use such as HIV and Hepatitis C, and overdose from consuming illicit drugs.

This case study examines a 28-year old female, Casey, who had began using prescription opioids at the age of twenty three, following an injury caused by a minor car accident. In the following months, her intake of prescription Oxycodone increased, and the script provided by her physician became insufficient. Casey began to buy Oxycodone from other sources, and when the expense became too high, she began using heroin as a cheaper alternative with the same effects. While actively addicted to opioids Casey became estranged from her friends and family, could no longer maintain her employment, and had to move to a smaller apartment in order to afford the rent while maintaining her addiction. Over the next couple of years, Casey checked into a detox a dozen times, participated in one-on-one and group counseling, entered and completed a 28-day treatment program, participated in outpatient treatment programs, attended both NA and AA meetings, and made use of every available resource for opioid addiction treatment with no success. After her third overdose, a counselor recommended she try methadone maintenance treatment.

During her first appointment at the clinic Casey had to provide a urine sample, and a proof of insurance. She also met with a counselor for a biopsychosocial assessment, as well as the clinic physician for her medical evaluation. She was admitted to the clinic and received her first dose on the following day.

In the following year Casey obtained steady employment and repaired her relationship with her sister, her father, and some of her friends. She has been on methadone for three years and is currently in the process of tapering down. Since she is presently stabilized at 80mg, and requires two to three weeks to stabilize on the lowered dose each time, she is hoping to be methadone free by Christmas, 2018.

According to the California Society of Addiction Medicine (2011), "Detoxifications and drug free modalities, although appealing to an understandable desire for recovery without medications, produces only 5-10% success rate. Methadone maintenance is associated with success rates ranging from 60 - 90%. The longer the people are in this modality the greater their chances are of achieving stable long-term abstinence." While this is true, many individuals in methadone maintenance treatment choose to remain on methadone instead of tapering off. Expected period of time on methadone maintenance is anywhere from six months to three years, since relapse is more likely when a patient attempts to taper off after less than two years, however, many patients remain on methadone for the rest of their lives (Kosten & George, 2002). Methadone also has negative side effects, including weight gain, insomnia, nausea, heart arrhythmia, sexual impotence, anxiety, and drowsiness, among others.

ALTERNATIVE STRATEGIES

There are other medication-assisted treatments available for opioid addiction, as well as medication free treatments. Medication-assisted treatments include buprenorphine and naltrexone, and medication free treatments include cognitive behavioral therapy (CBT) and 12-step programs such as Narcotics Anonymous.

Medication-assisted treatments, although different in action (agonist vs. antagonist), work on the same receptors involved in opiate addiction.

1. Buprenorphine, a partial opioid agonist, has a higher affinity for opioid receptors than does heroin (Itzoe & Guarnieri, 2017). According to Itzoe and Guarnieri (2017), it also exhibits a ceiling effect, which means that a higher dose will not result in respiratory depression or increase in positive mood. However, buprenorphine does not eliminate dependence, and without naloxone (antagonist found in Suboxone along with buprenorphine), it can be abused and misused like any other opiate (Itzoe & Guarnieri, 2017).
2. Naltrexone, an opioid antagonist, works by clogging the opioid receptors and blocking the effects of opioids (Kosten & George, 2002). Since naltrexone is not

an opioid, it does not help with withdrawal symptoms, and it has no addictive properties (Kosten & George, 2002). According to *SAMHSA* (2005), "Patient groups frequently have demonstrated poor compliance with long-term naltrexone therapy, mainly because naltrexone neither eases craving for the effects of illicit opioids when used as directed nor produces withdrawal symptoms when discontinued." Naltrexone was found to have the best results among low severity opioid users, and poor results among high severity opioid users due to "the increased opioid withdrawal symptoms and dysphoria" (Sullivan et al., 2015).

Medication free treatments include 12-step programs, and cognitive behavioral therapy.

1. 12-step programs such as Narcotics Anonymous address not only the psychology of the person with addiction, but their spirituality as well (Miller, 2015). Miller (2015) states that the Twelve-Step Facilitation therapy encourages, "not only attendance, but participation, in meetings; it explains the potential benefits of working with a sponsor and promotes the individual developing a relationship with a sponsor; it explores problems or psychological resistances to attendance, participation, actual 'working the steps,' and the development of a sponsor-sponsee relationship; and it opens the door to 'AA-related activities' such as volunteer service to one's AA 'home group' or AA 'clubhouse' and involvement with AA-related social events, retreats, and local and state conventions." However, Tracy and Wallace (2016) acknowledge that while peer support groups in 12-step programs have shown positive effects such as healthy

coping, high abstinence rates, and self-efficacy, the religious nature of some of these 12-step programs can be a deterrent.

2. According to McHugh, Hearon, and Otto (2010), cognitive behavioral therapy for substance use disorders “has demonstrated efficacy as both a monotherapy and as a part of combination treatment strategies.” Some of the treatment elements include operant learning strategies, skills building interventions, and cognitive as well as motivational elements (McHugh, Hearon, & Otto, 2010). One element that is consistent across strategies is the use of learning-based approaches to target maladaptive behavioral patterns, as well as motivational and cognitive barriers to change (McHugh, Hearon, & Otto, 2010).

RECOMMENDATIONS

Since Casey had been abusing opioids for a period of years and has built up significant tolerance, she could be considered a high severity opioid user. As such, treatment with naltrexone would likely prove to be ineffective, as the withdrawal symptoms may trigger a relapse. She had attended counseling sessions, and participated in the 12-step programs, before beginning her methadone treatment. Therefore, Casey’s best alternative to methadone might be buprenorphine, or more specifically, a long acting buprenorphine implant. These implants, which in some cases, can last up to six months, can provide “continuous, long-term steady-state blood levels of medication” (Itzoe & Guarnieri, 2017). The implant would eliminate the possibility of patient nonadherence when it came to their daily dose, and eliminate the possibility of the drug being consumed by another individual. However, this implant is currently only approved by FDA for those “who have demonstrated clinical stability from previous oral regimens of the drug” (Itzoe & Guarnieri, 2017).

Overall, research seems to show that opioid replacement therapies, such as treatment with methadone or buprenorphine have shown to be “safe and effective in suppressing illicit drug use, improving physical and mental wellbeing, and reducing all cause and overdose mortality” (Sordo et al., 2017). Although Sordo et al. (2017) do agree that mortality risk is significantly high in the first four weeks after entering treatments and during two weeks post treatment completion, they recommend that precautions be taken to increase safety during these periods.

Opioid replacement therapies are valid and severely underutilized harm reduction methods. It is a common misconception that methadone and buprenorphine substitute one addiction for another. According to the U.S. Department of Health and Human Services (2016), “This belief has reinforced scientifically unsound “abstinence-only” philosophies in many treatment centers and has severely limited the use of these medications.” However, opioid replacement therapies should be combined with other non-medical therapies such as 12-step programs, and cognitive behavioral therapies, to achieve the best overall outcome for those addicted to opiates.

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